

Crafting Our Future



NASA Langley Research Center



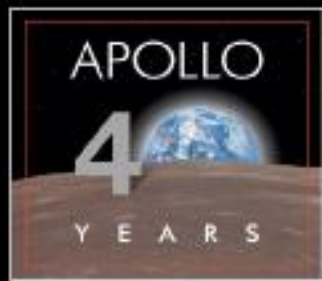
Aeronautics



Science

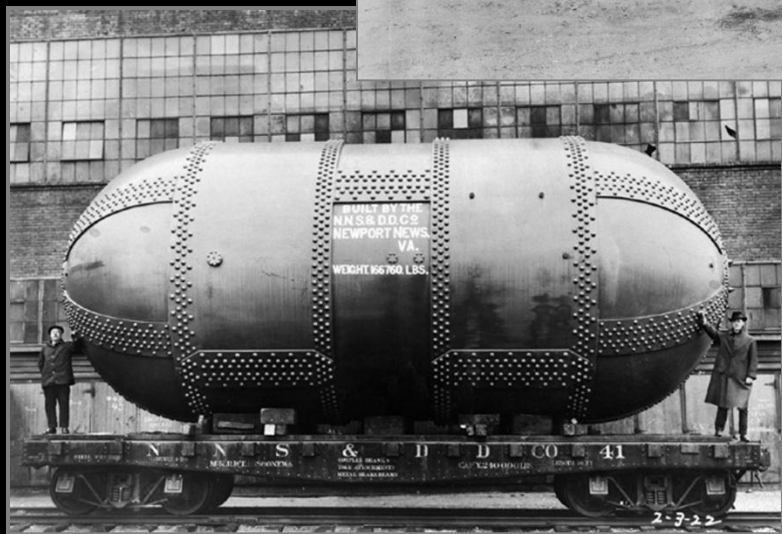


Exploration





Delivering for Today...
Preparing for Tomorrow.





Langley Research Center



Infrastructure/Facilities

- 788 acres, 241 Buildings
- \$2.7 B replacement value

~\$725M Budget (2008 President's Budget)

~\$710M NASA budget

~\$15M External business

~3,500 Workforce (+ ~ 250 students)

~1,900 Civil Servants

~1,600 Contractors

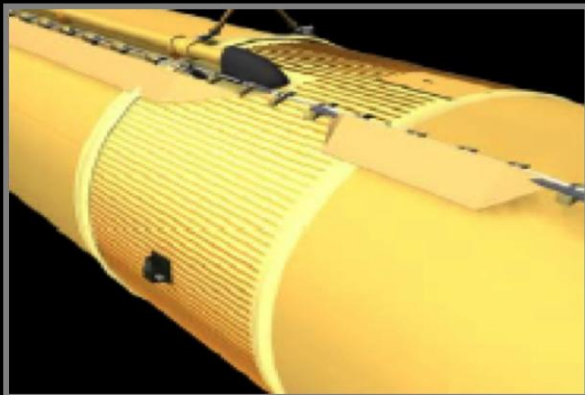


2006 Economic Impact of NASA Operations in Virginia (Langley and Wallops) and Partners

Langley Portfolio

- Langley contributes to all aspects of NASA's Mission
 - Exploration
 - Space Operations
 - Science
 - Aeronautics
- Langley also collaborates with others on critical aerospace R&T

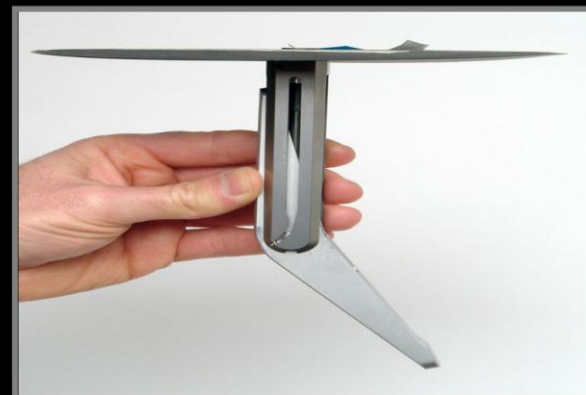
Helping Fly The Shuttle Safely



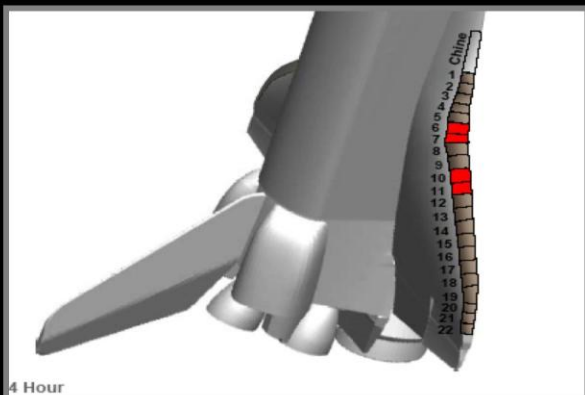
*External Tank PAL
Ramps*



*IR Camera Inspection
System*



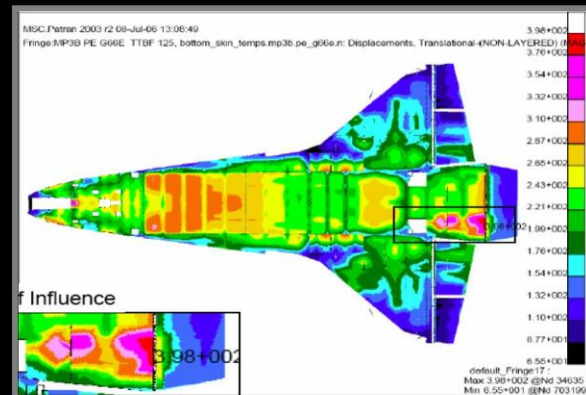
*On-orbit Repair
Technologies*



*Wing Leading Edge
Impact Detection
System*



*Mission Management
Support*



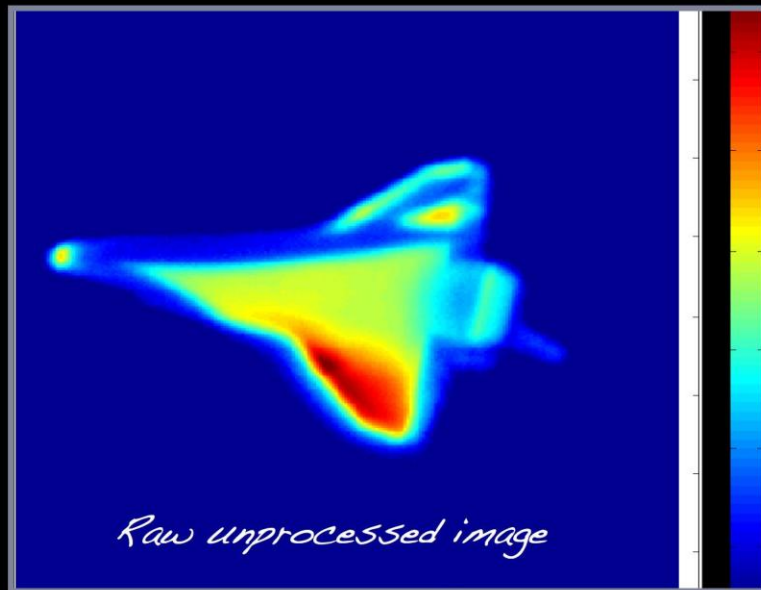
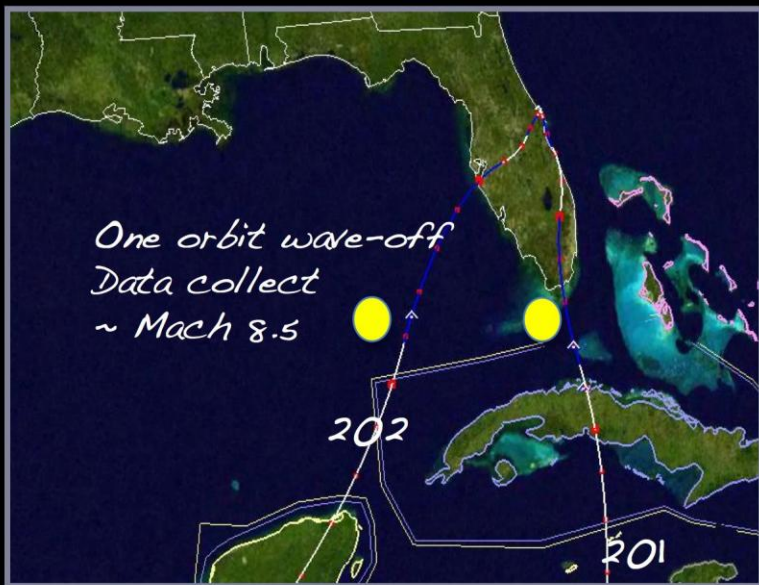
*Aerothermodynamic
Modeling*



HYTHIRM



Space Ops

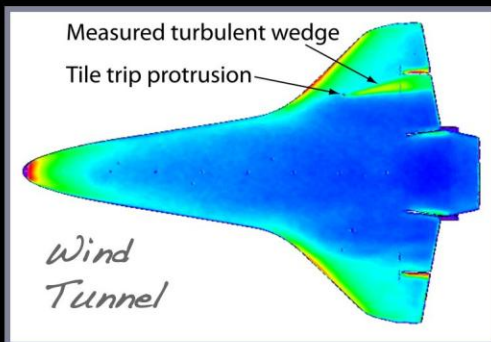


STS-119 Success Criteria:

To obtain spatially resolved infrared imagery that will provide a quantified surface temperature map of the Shuttle during hypersonic re-entry

Near Term Goal:

Shuttle as target of opportunity to demonstrate thermal imaging capability with existing technologies during Shuttle (STS-119) boundary layer transition flight experiment



Onward With Exploration

Materials Studies



Landing System Drop Tests



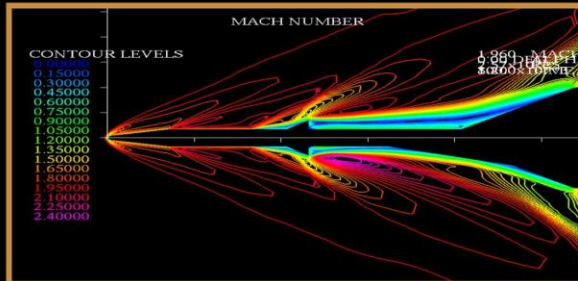
Lunar Architecture & Concepts



Flight Test Articles



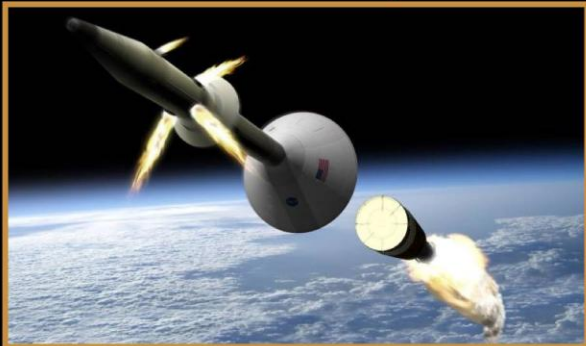
Ares I Aero Characterization



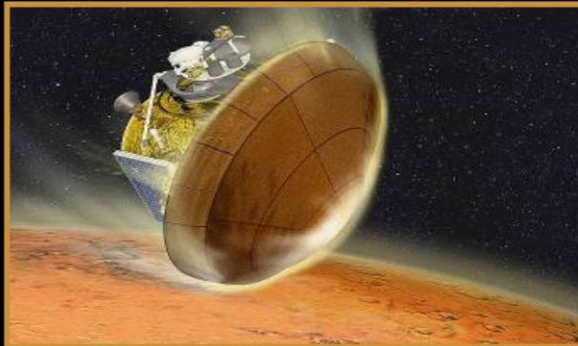
Habitat Structures & Materials



Launch Abort System



Entry, Descent & Landing Systems



Mars Architecture

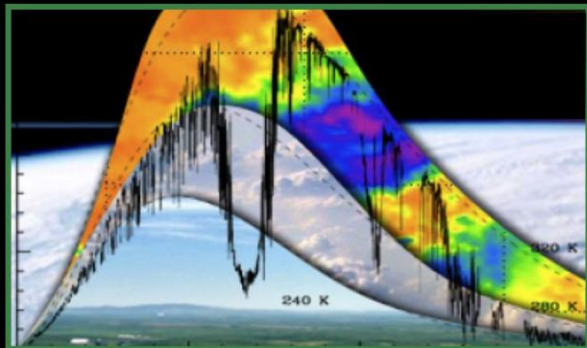


ARES 1X Becomes A Reality

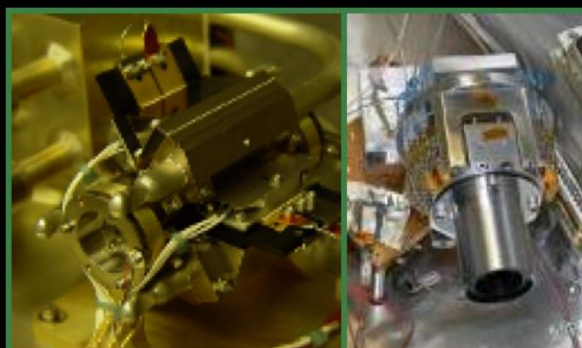


Understanding Our Planet

CLARREO



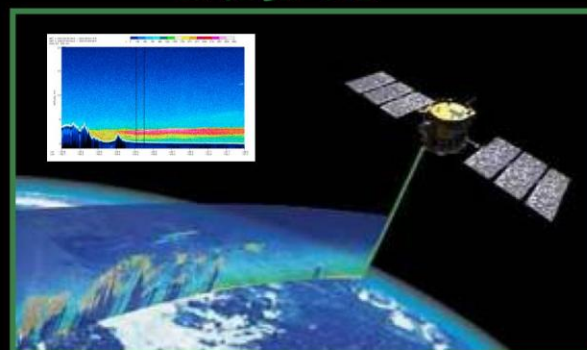
Advanced Instruments



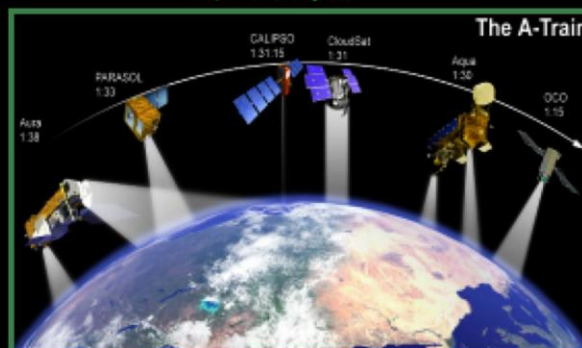
Space-based Missions



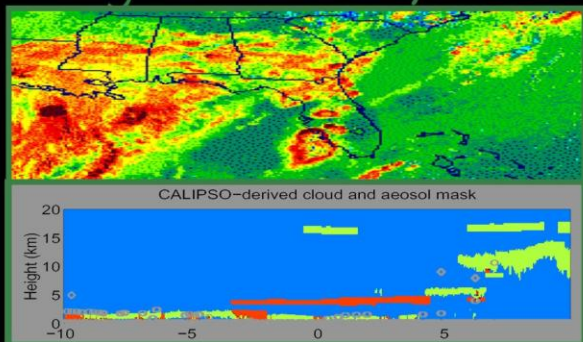
CALIPSO



A-Train



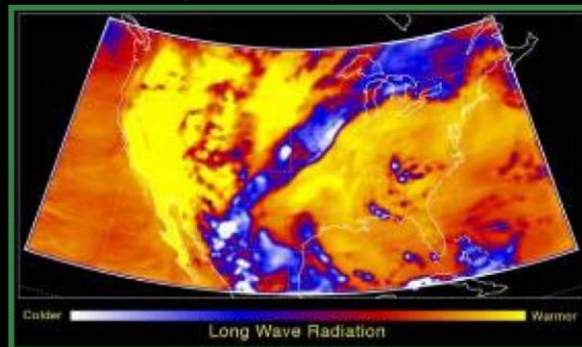
Algorithm Development



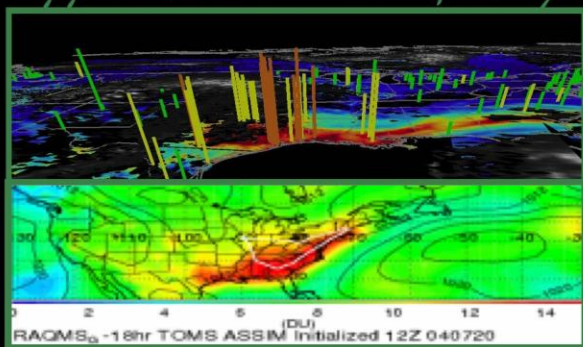
Field Missions



CERES - Radiation



Applications - Air Quality



Climate Absolute Radiance & Refractivity Observatory

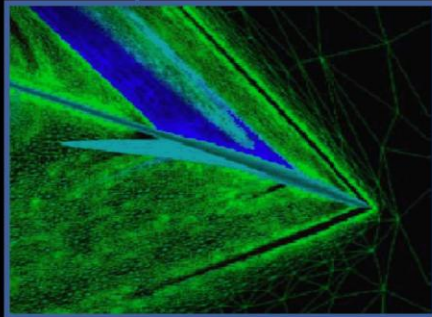


Continuing To Shape The Future Of Aeronautics

Hypersonics



Supersonics



Fixed-Wing



Rotary-Wing



Integrated Vehicle Health Management



Integrated Intelligent Flight Deck



Aircraft Aging and Durability



Integrated Resilient Aircraft Control



Airportal



Airspace



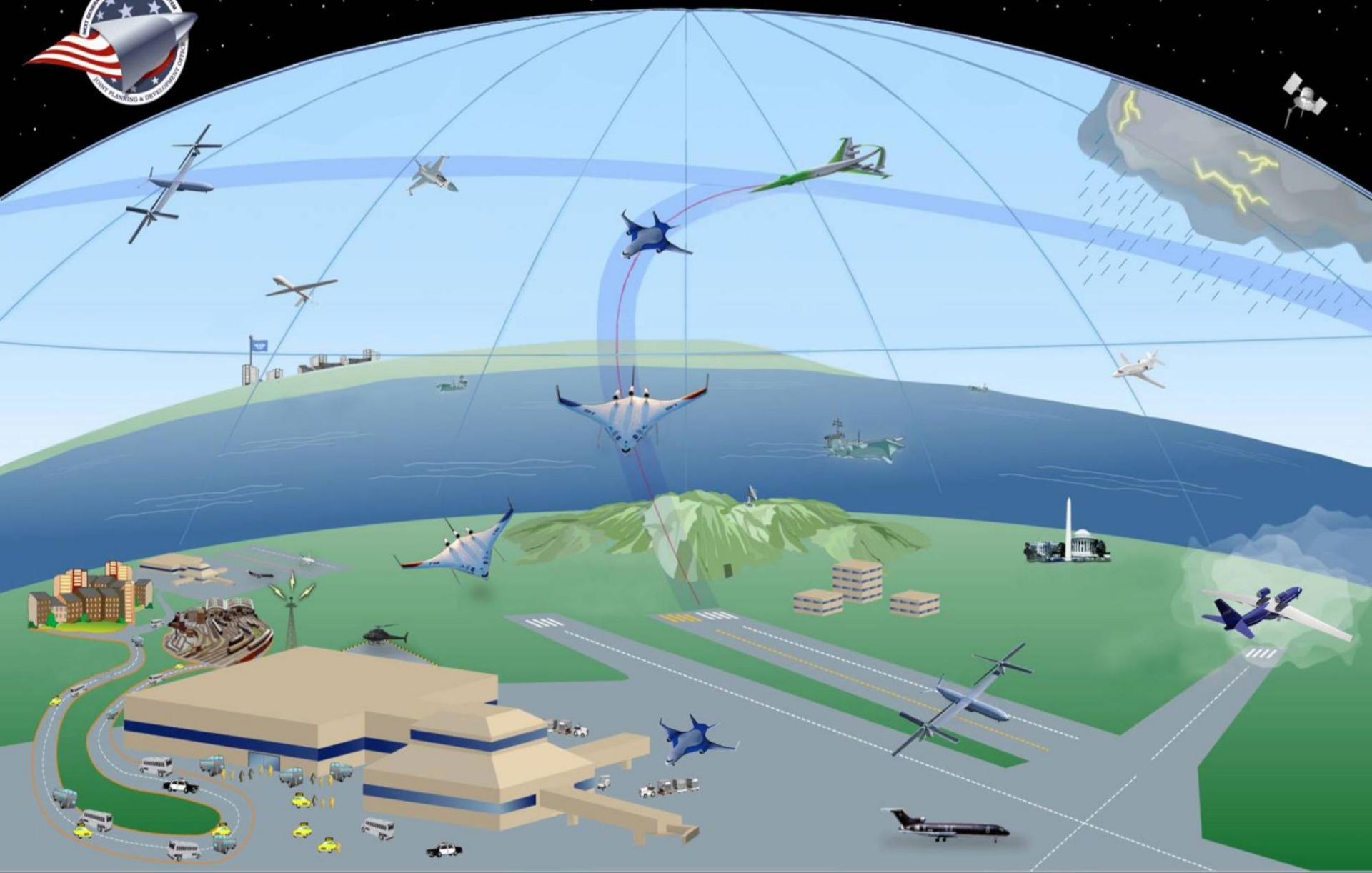
Test Facilities



Advanced Aircraft

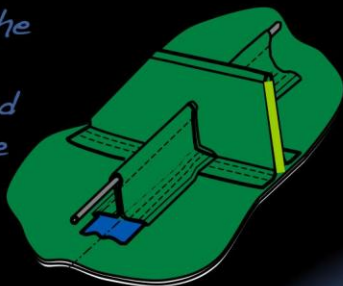


Next Gen



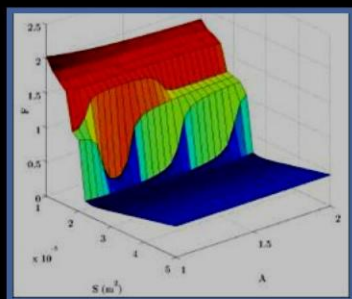
Next Gen Fixed Wing Aircraft

Reducing the weight of advanced composite designs



Challenges

Designing inlets and fans for embedded engines



Creating complex Physics-based tools to design new aircraft configurations



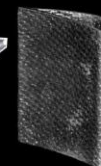
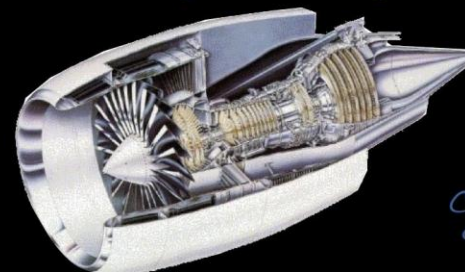
Developing high-temperature smart materials for noise reduction of nozzle fan

Developing high temperature materials to enable high OPR engine

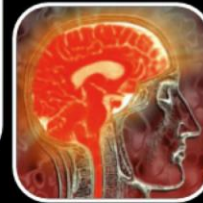
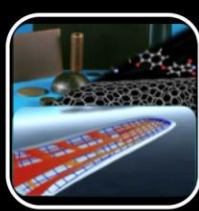
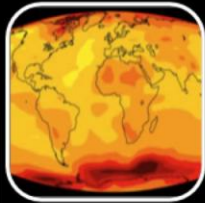
Integrating ultra-high bypass engines



High temp disk



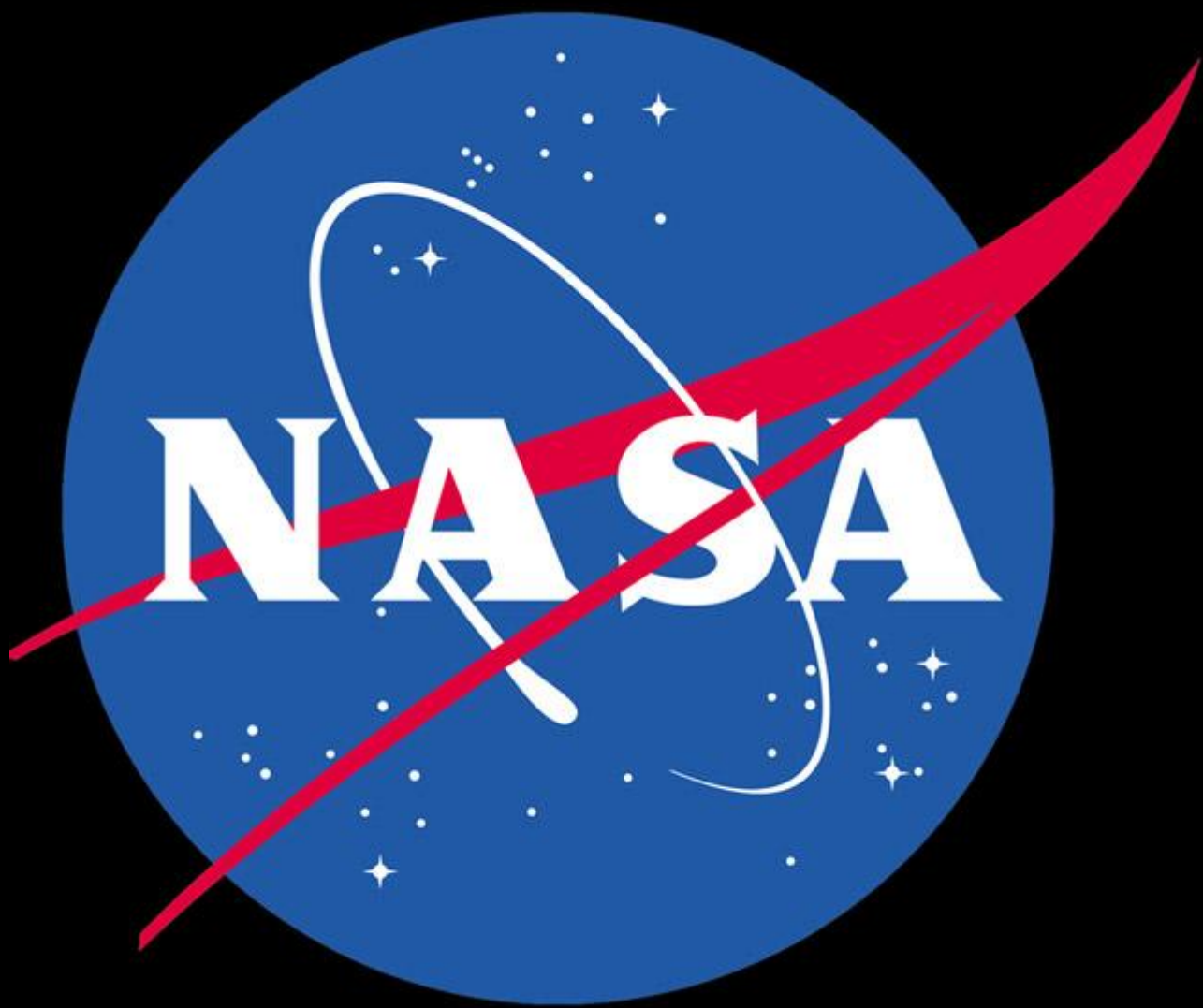
CMC turbine component



Revolutionary Technical Challenges



21st Century Lab



NASA Langley Research Center